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CITY BOTANIZING.

WILLIAM P. RICH.

IT is commonly believed that the botanical collector must of necessity get away from the city to find material for his studies and that the open fields and woodlands of the country are the only places of interest to him in the pursuit of his favorite avocation.

It is one of the advantages, however, of plant collecting that the botanist is not always obliged to travel far to find objects of interest to him. If, by reason of the exacting requirements of his daily occupation, he is unable to visit new fields in distant regions during the flowering season, he can generally find close at hand abundant sources of interesting and profitable employment.

There are few localities that will not yield some plants worthy of record, the consideration of which will repay the local botanist for the time devoted to them, and even within the city's limits will be found collecting grounds that may well engage his attention.

In this connection I cannot refrain from referring to a paragraph in an address delivered in 1816 by Stephen Elliott, the author of the "Botany of South Carolina and Georgia." Speaking of his favorite study he said "It has been for many years the occupation of my leisure moments; it is a merited tribute to say that it has lightened for me many a heavy and sometimes many a rugged hour; that beguiled by its charms, I have found no road rough or difficult, no journey tedious, no country desolate or barren. In a solitude never solitary, in a desert never without employment. I have found it a relief from the languor of idleness, the pressure of business, and even the unavoidable calamities of life."

To the sentiments so well expressed in this quotation I am moved to

add the city's claim as a desirable field of botanical observation, and to call attention in this article to some of the plants collected in Boston during recent years which have been of interest to me. The localities mentioned are not those of suburban districts but are in close proximity to busy streets or residential avenues of the city proper.

The first time I ever found *Ranunculus sceleratus* L. was in the ditches along the old Providence Railway, near Newton Street. It grew there abundantly along with *Lemna minor* L. until the draining of the ditches exterminated it and I have seldom met with it since in more extended explorations. My first collection of *Setaria verticillata* Beauv. was in a front yard on Mount Vernon Street, and this also has been infrequently met with. *Chenopodium glaucum* L. I collected for the first time in the crevices of the brick sidewalk on the edge of the Public Garden, and in the last few years *Galinsoga parviflora* Cav. var. *hispida* DC. has been growing freely at the base of the granite wall at the Church Street entrance to the Subway.

But it is the vacant lots and dumping grounds of the city that furnish the city botanist with an almost inexhaustible supply of material. On every visit something new and strange will be seen, perhaps disappearing in a few days, to be replaced by other surprises.

There are two localities in Boston which have proved sources of continual botanical interest for a number of years. One of these, the South Boston flats, now mostly occupied as a railway terminal, has furnished many interesting species, the enumeration of which would require another article and may be left for future presentation.

The other locality is the Back Bay lands and a list of some of the more noteworthy plants collected here at various times in recent years is the principal object of this sketch.

This region, formerly a salt marsh, has been filled in with gravel brought from the neighboring town of Needham. The streets are filled up to city grade, leaving many vacant lots, in some of which the original solid marsh still remains.

For a few years, while the filling was in progress, many native plants and shrubs, brought in with the gravel, maintained their existence, but, at length, most of them succumbed; apparently unable to meet the competition of the hosts of cosmopolitan weeds which soon overran the entire region and now flourish in the greatest luxuriance, forming jungles of vegetation in many of the lots.

The establishment and planting of the Back Bay Fens in later years

have been the sources from which many of the more conspicuous plants herewith mentioned have been doubtless derived. Some of them thrive for a few seasons and disappear while many seem to have taken up a permanent abiding place here, and only the inevitable course of the city's growth will finally destroy them.

In the accompanying record only those plants, for the most part, that are likely to attract the attention of the passer-by or that are of especial botanical interest are noted. The many species of the ordinary weeds and grasses and those that are commonly found elsewhere are omitted.

Perhaps the first flowering plant of the season that will attract notice, other than the willows and poplars, is the *Petasites vulgaris* Desf., one of the coltsfoots. It has flourished on a damp gravelly bank for at least eleven years, sending up in April and May numerous thick, naked flower stalks, succeeded later in the season by enormous leaves a foot and a half in diameter.

In the early part of the summer few plants of especial note are prominent and it is not until later in the season that the richness of the flora is manifested.

In June I have recorded the following species in flower:

Amorpha fruticosa L., a shrub five or six feet high; *Lonicera Morrowii* Gray, rather frequent; *Desmodium Canadense* DC.; *Ptelea trifoliata* L., abundant as a small tree; *Amsonia Tabernaemontana* Walt., a bushy, herbaceous plant, about three feet in height, with milky juice and bluish flowers; and *Coronilla varia* L., very abundant and covering broad areas of gravelly banks with its profusion of rose-colored blossoms.

An *Astragalus*, growing in one of the lots on Boylston Street, has attracted attention during the past two years, and has been collected in flower and fruit. It has been identified by Prof. M. L. Fernald of the Gray Herbarium as *Astragalus glycyphyllos* L. It is a European plant and is probably one of the escapes from the neighboring Back Bay Fens.

In June, 1907, I came across a clump of a trailing, raspberry-like plant with a profusion of small, pale-red flowers. I watched it from week to week until it fruited, to make sure that it belonged to the raspberry section of the genus *Rubus*. I could find no description of such a plant in any of the horticultural lists or botanical manuals and it was at length identified by Mr. Alfred Rehder of the Arnold Arboretum

as *Rubus triphyllus* Thunberg, a species from Japan. It is still flourishing the present year.

Another *Rubus* growing here has for several years greatly interested me. It is a coarse-leaved prostrate plant but with the inflorescence and fruiting racemes of the high-bush blackberry, *Rubus argutus* Link. It seems to answer very well to the description of *Rubus villosus* Ait., var. *humifusus* T. & G. of Gray's Manual.

In this month the Russian thistle, *Salsola Kali* L. var. *Tragus* Moq., begins to show itself and is more characteristic in its early stages and differs more from its close relative, the seashore species, than it does later in the season. *Sisymbrium altissimum* L., a comparatively recent immigrant to this part of the country, is also becoming abundant and will be very much in evidence, especially in its later stages of development as a "tumble weed," for the rest of the season.

The July list could be greatly extended by the inclusion of many species that are common outside of the city as well as here, and I shall mention only those in which I have been particularly interested or which are of sufficient importance for botanical record.

Lysimachia vulgaris L. grew abundantly at one time in a vacant lot near where now stands the Institute of Technology on Boylston Street, and not far away from it was a little colony of *Euphorbia marginata*, Pursh. *Heracleum villosum* Fisch., probably thrown out from the Park, has taken possession of several corner lots and is one of the most conspicuous plants in the entire region. *Echinops sphaerocephalus* L., the globe thistle, and *Polygonum cuspidatum* S. & Z., also outcasts from the Park, appear to be happy and thriving in their new locations on the gravelly banks and can be found in many different places. A few plants of *Genista tinctoria* L. were seen in 1906 and in the same season Mr. C. H. Knowlton called my attention to *Epilobium hirsutum* L. which he had discovered in one of the lots.

Another interesting find made July 18, 1906, in company with Mr. Knowlton, was a single plant of *Polygonum arenarium* W. & K. This, as far as I can learn, is the first published report of this species in Massachusetts, although a specimen I collected in July, 1899, on the South Boston flats appears to be the same. *Brassica Sinapistrum* Boiss. and *Brassica juncea* Cosson both grow here, the latter species, however, much more abundant.

The list for August is a long one in my records and must be abbreviated here. *Sida Napaea*, Cav. with its white flowers and maple-like

leaves grows in scattered colonies to a height of six and eight feet and near by can be usually found dense masses of *Bocconia cordata* Willd. attaining an equal height. Various species of sunflowers enliven the masses of vegetation, the most interesting among them being *Helianthus tuberosus* L., *Helianthus strumosus* L., and *Silphium perfoliatum* L., the last species being especially conspicuous. *Inula Helenium* L. has been noticeable in one of the lots for several years.

Polygonums occupy large areas, the principal species being *Polygonum Pennsylvanicum* L., *P. lapathifolium* L., *P. Persicaria* L., and frequently *P. orientale* L. Both species of *Datura* are found, *D. Stramonium* L. and *D. Tatula* L., and the velvety-leaved *Abutilon Avicennae*, Gaertn. is occasionally seen. *Lespedeza capitata* Michx. is abundant and *Senecio vulgaris* L. and *S. viscosus* L. have been collected. *Ipomoea hederacea* Jacq., *Petunia nyctaginiiflora* Juss., *Campanula rapunculoides* L., and the canary grass, *Phalaris Canariensis* L. can be usually found this month on dumping grounds. *Artemisia caudata* Mich. is abundantly distributed over the gravelly levels and, occasionally, in damp places, a few plants of *Lythrum alatum* Pursh. have been seen. The large-headed burdock, *Arctium Lappa* L. var. *majus* Gray, is somewhat frequent on gravelly banks.

Cyperus speciosus Vahl. I first collected here in August, 1879, and it was still in existence in August of the present year. Among the numerous grasses are *Panicum miliaceum* Willd., *Panicum Waltèri* Pursh, *Eragrostis Purshii* Schrader, *Bromus tectorum* L., and *Phragmites communis* Trin. The *Phragmites* I think must be of comparatively recent introduction as it has not yet attained the flowering stage. It is also abundant and spreading in the South Boston locality.

September is, perhaps, if a choice must be made, the best month of all for this kind of botanizing. Most of the August plants are still lingering in flower, while belated species are pushing forward to complete their cycle of life. Noteworthy among the Compositae at this season are *Aster Novae-Angliae* L. and *Aster subulatus* Michx., the latter species very abundant in the marshy lots. In September, 1879, I found *Helianthus rigidus* Desf., but it has been long since covered up. *Pluchea camphorata* DC., one of our native plants, still maintains itself in certain lots. *Artemisia biennis* Willd., mentioned in the Sixth Edition of Gray's Manual as rapidly extending eastward from the West, has since that time arrived in Boston and is now common,

and *Bidens vulgata* Greene, which a few years ago I thought rare is abundant on every hand.

Polygonum prolificum Robinson is plentiful in damp ground inside the Park, and in 1905 Mr. Henry A. Purdie brought me specimens of *Polygonum exsertum* Small from the same place, where I have seen it every year since. Last year I came across a few plants of what I make out to be *Chenopodium Boscianum* Moq., the only time I have ever collected it. *Chenopodium Botrys* L. is occasionally found and *C. ambrosioides* L. var. *anthelminticum* Gray is abundant. *Rumex pallidus* Bigelow has been collected several times and *Amarantus blitoides* Watson, forming flat mats in waste ground, can generally be found this month. *Cassia Chamaecrista* L., *Urtica dioica* L., *Pycnanthemum lanceolatum* Pursh, and *Echinocystis lobata* T. & G. are occasionally met with. *Euphorbia Esula* L. grew here some twenty or more years ago but has now disappeared.

Last year Mr. Purdie called my attention to a goldenrod which he found somewhat puzzling. I made it out to be *Solidago asperula* Desf. and the identification was afterwards verified by Prof. Fernald of the Gray Herbarium. These particular plants seem to have more of the *rugosa* character in them than is usual with those I had heretofore seen, and I am more than ever of the opinion, of which there has long been a suspicion that the so-called *Solidago asperula* Desf. is really a hybrid of *S. sempervirens* L. and *S. rugosa* Mill.

Two shrubs whose origin here can be directly traced to the neighboring Park are becoming noticeable in several of the lots. They are *Baccharis halimifolia* L. and a Tamarix, the species of which I am not sure of. Another herbaceous plant, probably from the same source, is conspicuous with its handsome blue flowers on several gravelly banks in August and September. My first identification of it was *Lycopsis arvensis* L., but Dr. E. H. Eames of Bridgeport, Connecticut, to whom specimens had been sent, pronounced it *Anchusa officinalis* L., which is probably correct. These two species bear very close superficial resemblances.

The nomenclature used in this list is mostly that of Gray's Manual, Sixth Edition, while the names of the garden plants mentioned are those in common use by horticulturists.

I look forward with interest to continued investigation of the flora of this region while it lasts. But the area is being gradually restricted as section after section is built upon and the time is not far distant when

all that will remain of its present profusion of plant life will be the specimens in the herbaria of the few collectors interested in city botanizing.

BOSTON, MASSACHUSETTS.

NOTES ON ALGAE. IX.

F. S. COLLINS.

GLOEOCYSTIS SCOPULORUM Hansgirg in Foslie, Contributions to knowledge of the marine algae of Norway, I. East Finmarken. Tromso Museums Aarshefter XIII, p. 155, 1890. This species was described by Hansgirg from material sent him by Foslie, collected in northern Norway; the material was found in clefts of rocks at high water mark and contained a number of minute forms, some of which Hansgirg described as new, while he identified others with already described species. Prof. Foslie has kindly furnished the writer with some of these forms, among them *G. scopulorum*. It forms gelatinous masses of greenish yellow color with cells 4–6 μ in diameter, united in colonies of two to eight cells, with distinctly stratified envelop. At Ragged Island, off Harpswell, Maine, in July, 1908, the writer found in a warm-water pool, above high water mark, among various small green and blue-green algae, an organism agreeing exactly with Foslie's specimen. But it is well known that in stations of this character plants often undergo strange transformations, *Ulothrix*, for instance, assuming Palmella and Gloeocystis forms that no one would connect with the normal form unless by observing the transitions. One can hardly resist the suspicion that *G. scopulorum* is some such stage of a *Ulothrix* or a *Urospora*, which are common in such stations in spring.

PROTOCOCCUS OVALIS Hansgirg, l. c., p. 159, Pl. III, fig. 12. Another doubtful form occurring in similar stations with the last mentioned species. The cells are ovoid or ellipsoid, 8–10 $\mu \times$ 9–12 μ , with thin wall and yellow-green contents, solitary or congregated in a formless, not specially mucilaginous layer. At the Ragged Island locality a form occurred agreeing with this description, and with the specimen from Foslie.